CLAIMS (TI-35498)

What is claimed is:

1. A method of downsampling a two-dimensional block of discrete cosine transform (DCT) coefficients, comprising:

  (a) providing a two-dimensional block of DCT coefficients;

  (b) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a first dimension of said block; and

  (c) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a second dimension of the results of step (b).

2. The method of claim 1, wherein:

  (a) said block is NxN; and

  (b) de-interlacing IDCT is $x_e = T^t(N/2)\, z_p + QT^t(N/2)K^t\, z_r$, where $T^t(N/2)$ is the $N/2$-point IDCT, $K = RLR^t$, where R is a bit-reversal permutation matrix; and L is a $N/2$ x $N/2$ lower-triangular matrix, and Q is a $N/2$ x $N/2$ diagonal matrix: $\mathrm{diag}[\cos((4m + 1)\pi/2N)]$ for $m = 0, 1, \ldots, N/2 - 1$.

3. The method of claim 1, wherein:

  (a) said block is 8x8.

4. A method of downsampling a two-dimensional block of discrete cosine transform (DCT) coefficients, comprising:

  (a) providing a two-dimensional block of DCT coefficients;

  (b) applying a one-dimensional de-interlacing inverse discrete cosine transform (IDCT) with respect to a first dimension of said block;

  (c) applying a one-dimensional inverse discrete cosine transform (IDCT) with respect to a second dimension of the results of step (b); and

  (d) downsample the results of step (c) with respect to said second dimension.

5. The method of claim 4, wherein:

   (a) said block is NxN; and

   (b) said de-interlacing IDCT is $x_e = T^t(4) z_p + QT^t(4)K^t z_r$, where $T^t(4)$ is the 4-point IDCT, $K = RLR^t$, where R is a bit-reversal permutation matrix; and L is a $N/2$ x $N/2$ lower-triangular matrix, and Q is a $N/2$ x $N/2$ diagonal matrix: $diag[\cos((4m + 1)\pi/2N)]$ for $m = 0, 1, ..., N/2 -1$.

6. The method of claim 4, wherein:

   (a) said block is 8x8.